

## INFRARED RECEIVER MODULE

### • Description

The HL-1838S is miniaturized infrared receivers for remote control and other applications requiring improved ambient light rejection.

The separate PIN diode and preamplifier IC are assembled on a single leadframe.

The epoxy package contains a special IR filter.

This module has excellent performance even in disturbed ambient light applications and provides protection against uncontrolled output pulses.



### • Features

- Photo detector and preamplifier in one package .
- Internal filter for PCM frequency.
- Inner shield,good anti-interference ability.
- High immunity against ambient light.
- Improved shielding against electric field disturbance
- 3.0V or 5.0V supply voltage; low power consumption.
- TTL and CMOS compatibility.
- Suitable transmission code:NEC code,RC5 code.

### • Applications:

1. Optical switch
2. Light detecting protion of remote contol
  - AV instruments such as Audio,TV,VCR,CD,MD,DVD,etc.
  - Home appliances such as Air-conditioner,Fan,etc.
  - CATV set top boxes
  - Multi-media Equipment

### ● Absolute Maximum Ratings(Ta=25 )

| Parameter             | Symbol | Ratings | Unit | Notice                                |
|-----------------------|--------|---------|------|---------------------------------------|
| Supply Voltage        | Vs     | 2.7-5.5 | V    | —                                     |
| Operating Temperature | Topr   | -20~+65 |      | —                                     |
| Storage Temperature   | Tstg   | -40~+85 |      | —                                     |
| Soldering Temperature | Tsd    | 260     |      | 4mm from mold body<br>less than 5 sec |

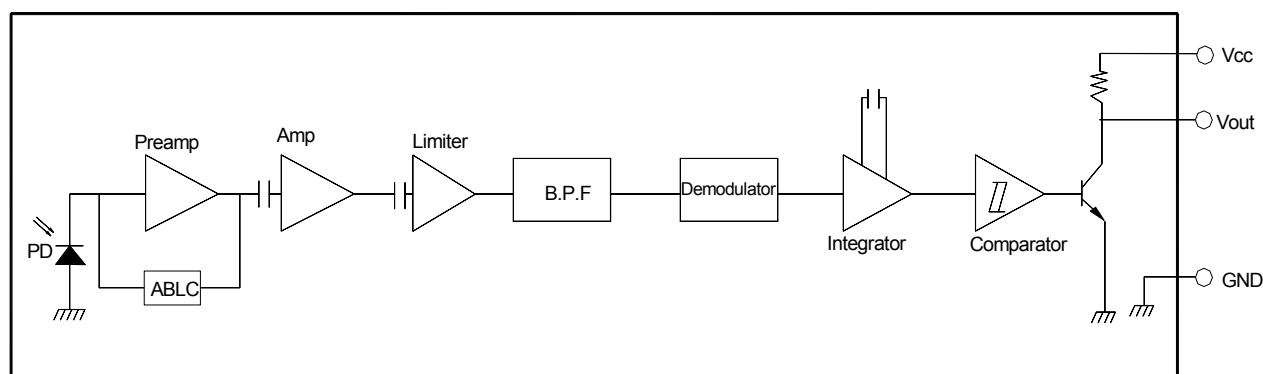
### ● Electrical And Optical Characteristics(Ta=25 )

| Parameter                 | Symbol          | Ratings |      |      | Unit | Condition          |
|---------------------------|-----------------|---------|------|------|------|--------------------|
|                           |                 | Min.    | Typ. | Max. |      |                    |
| Supply Voltage            | Vs              | 2.7     | -    | 5.5  | V    |                    |
| Supply Current            | Icc             | —       | —    | 1.5  | mA   | No signal input    |
| Reception Distance        | L <sub>0</sub>  | 15      | —    | —    | m    | At the ray axis*1  |
|                           | L <sub>45</sub> | 8       | —    | —    |      |                    |
| B.P.F Center Frequency    | f <sub>o</sub>  | —       | 38   | —    | KHz  |                    |
| Peak Wavelength           | λ <sub>p</sub>  | —       | 940  | —    | nm   |                    |
| Half Angle                | θ               | —       | 45   | —    | deg  | At the ray axis *1 |
| High Level Pulse Width    | T <sub>H</sub>  | 400     | —    | 800  | μS   | At the ray axis *2 |
| Low Level Pulse Width     | T <sub>L</sub>  | 400     | —    | 800  | μS   |                    |
| High Level Output Voltage | V <sub>H</sub>  | 4.5     | —    | —    | V    |                    |
| Low Level Output Voltage  | V <sub>L</sub>  | —       | —    | 0.5  | V    |                    |

\*1:The ray receiving surface at a vertex and relation to the ray axis in the range of  $\theta=0^\circ$  and  $\theta=45^\circ$

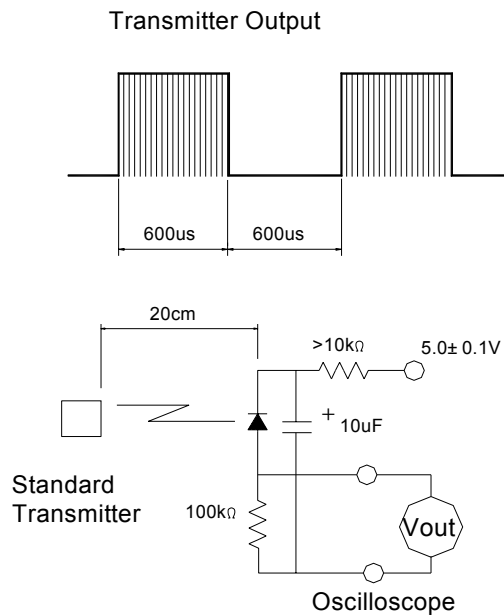
\*2:A range from 30cm to the arrival distance. Average value of 50 pulses

### ● BLOCK DIAGRAM

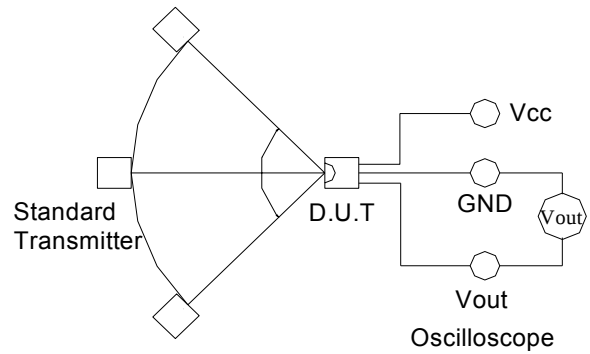


### ● Test Method

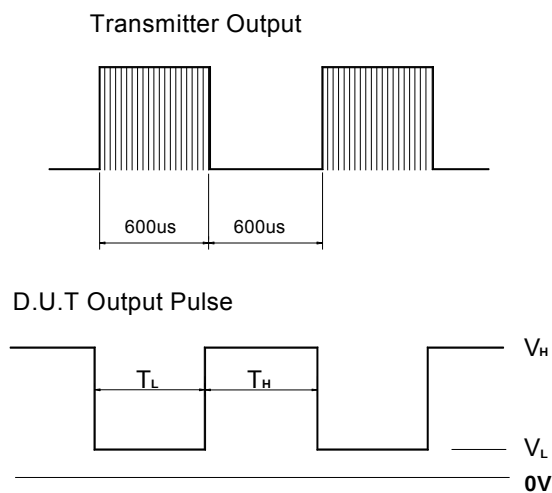
#### A. Standard Transmitter



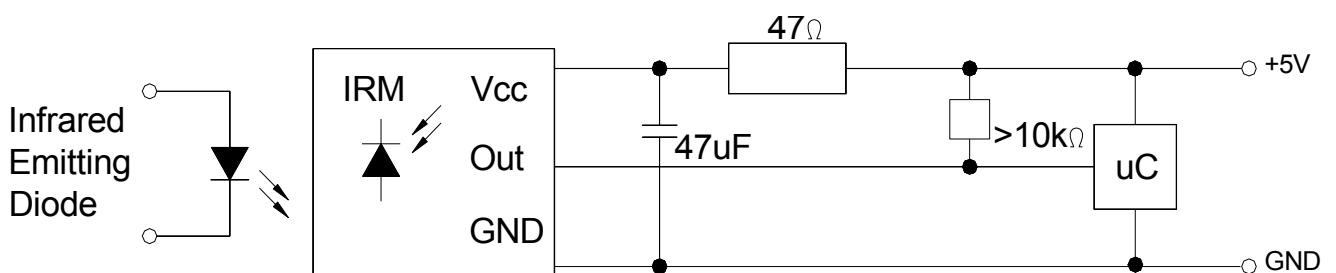
#### B. Detection Length Test



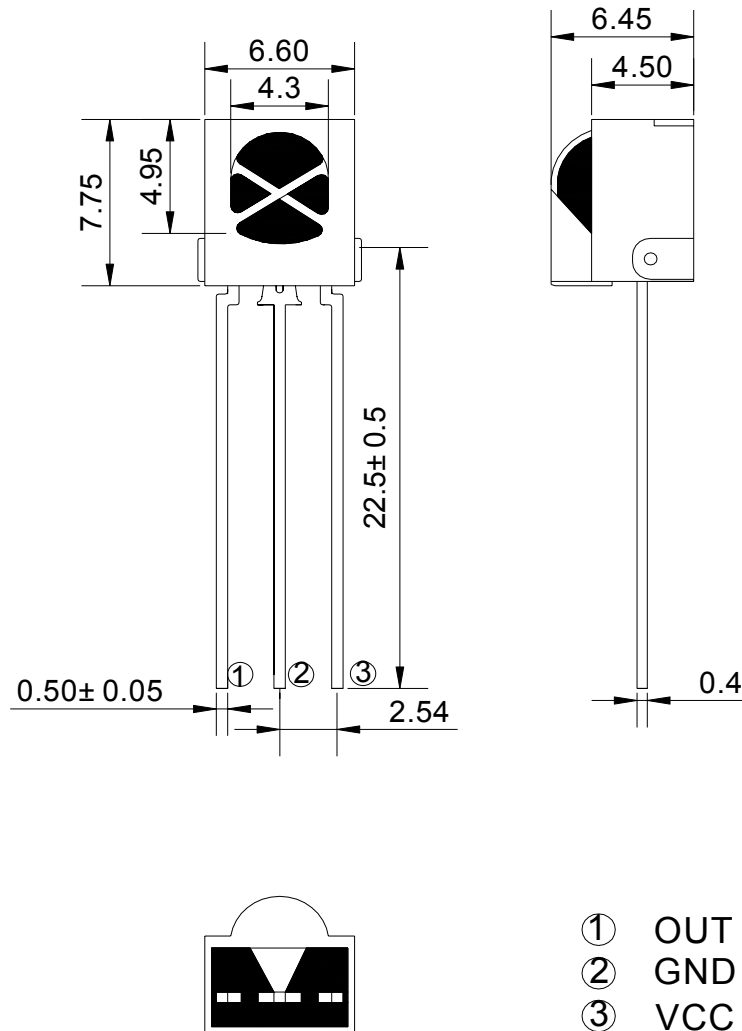
#### C. Pulse Width Test



### ● Application Circuit



### ● Package Dimensions:



### NOTES:

- 1.All dimensions are in millimeters (inches).
- 2.Tolerance is  $\pm 0.30\text{mm}$  (0.012") unless otherwise specified.
- 3.Specifications are subject to change without notice.

### ● Electrical And Optical Curves(Ta=25 )

Fig.1 Relative Spectral Sensitivity vs. Wavelength

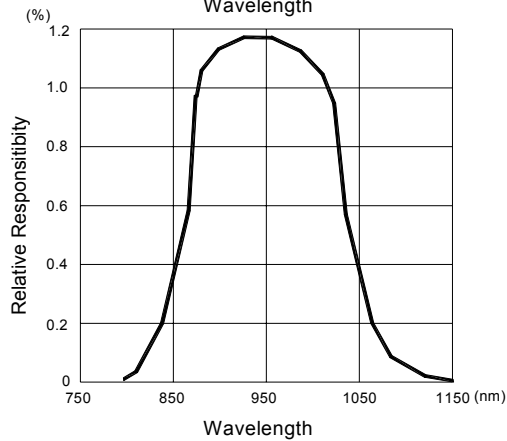


Fig.2 Relative Transmission Distance Vs. Direction

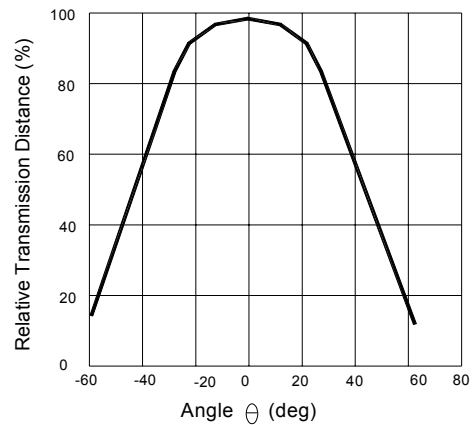


Fig.3 Frequency Dependence of Responsivity

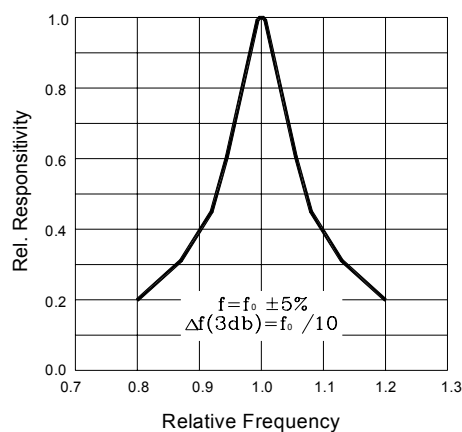


Fig.4 Supply Current vs. Ambient Temperature

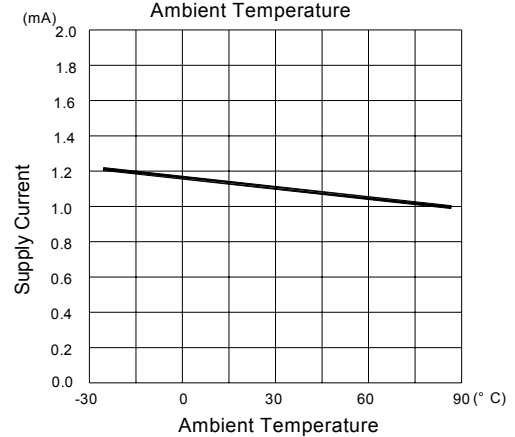


Fig.5 Relative Transmission Distance vs. Direction

